

# The Financial Impact of Registered Sex Offenders on Home Sale Prices: A Case Study of McLean County, Illinois

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## Abstract

This study extends the current sex offender and housing literature by examining whether the presence of registered sex offenders (RSOs) and sexual predators (SPs) influenced home sale values in a mixed rural/agricultural and urban community. Using ArcGIS, the residences of RSOs in McLean County, Illinois, and home sale transactions, along with property and neighborhood characteristics were geocoded. The associations of home sale values to the distance to the nearest RSO and SP, as well as, the concentrations of RSOs and SPs were examined. Results revealed that each foot increase between the sold home to the residence of the nearest RSO and SP was associated with an increase in home sale prices of \$17.03 and \$15.25, and the concentrations of two or more RSOs and SPs was associated with a reduction in home sale prices of \$12,750 and \$17,797. These findings inform the debate surrounding the requirements placed on sexual offender registration, community notification, and residency restrictions.

**Keywords:** sex offenders, sexual predators, sold homes, sale prices, Illinois, rural



## **Introduction**

The massive surge in legislation in the 1990s written with the purpose of protecting the public from persons convicted of sexual crimes has produced complex and multi-faceted consequences for neighborhoods where sex offenders reside. Sex offender legislation set out to register and control the movement of these criminals. This principle of public protection resulted in the establishment of the sex offender registry, community notification, and residency restrictions laws. However, research has suggested that legislation has not worked as intended. Instead, legislative attempts to segregate sex offenders from vulnerable victims have created unintentional repercussions for communities, such as inadvertently relegating registered sex offenders (RSOs) into less-densely populated areas with pre-existing unfavorable social and physical conditions (Chajewski & Mercado, 2009; Gordon, 2013; Levenson & Cotter, 2005; Prentky, 1996; Suresh, Mustaine, Tewksbury, & Higgins, 2010; Tewksbury, 2002, 2007; Tewksbury, Jennings, & Zgoba, 2012; Tewksbury & Mustaine, 2006, 2008; Turley & Hutzel, 2001; Zandbergen & Hart, 2006).

Coupled with RSOs being legislatively forced into disordered neighborhoods, there is also a financial phenomenon that has been associated with RSOs and home sale prices (Bian, Brastow, Waller, Stoll, & Wentland, 2013; Caudill, Affuso, & Yang, 2014; Larsen, Lowrey, & Coleman, 2003; Linden & Rockoff, 2008; Pope, 2008; Wentland, Waller, & Brastow, 2014). However, previous research has largely ignored rural and small town communities. The following is an exploration intended to fill these gaps of the financial effect RSOs may have on home sale prices in less densely populated rural and agricultural neighborhoods.

## **Background**

### **Sex offender legislation**

Sex offender registries made their official appearance in the mid-1990s with the Jacob Wetterling Crimes against Children and Sexually Violent Offender Registration Program of 1994. Eventually, these registries became fully accessible to the public with Megan's Law of 1996. Efforts by John and Revé Walsh—parents of Adam Walsh, who was abducted and murdered on July 27, 1981—expanded the required personal information of sex offenders to be listed on state registries, which called for their: name, social security number, address of residence, name and address of employment, name and address of educational institution, license, and car description. With this expansion, the registry became a dual-purpose tool. The public could make themselves aware of the location of RSOs in their neighborhoods and increase guardianship to vulnerable populations (Sample & Kadleck, 2008; Zevitz, 2003).

This increased awareness brought about the popularity of residency restrictions. Such restrictions make it illegal for RSOs to live near locations where children are known to congregate. Currently, 30 states and hundreds of municipalities have imposed residency restrictions on RSOs (Meloy, Miller, & Curtis, 2008). Illinois, the state under examination, maintains one of the shortest lengths of 500 feet. The state of Illinois' residency restriction is only applicable to individuals who committed a sexual offense against a minor (720 ILCS § 5/11-9.3). Illinois also demarcated sex offenders within their state, with each offender imposed with varying requirements. The sexual predator (SP) classification applied to those who either received a second or subsequent registerable conviction or attempt at certain sexual offenses (730 ILCS § 150/2). Predators are required to register once a year for life (730 ILCS § 150/7) and subjected to a 500-foot loitering residency restriction that prohibited their presence at public parks (720 ILCS § 5/11-9.4-1). Unlike SPs, sexually violent persons suffered from a mental disorder and are believed to reoffend sexually (725 ILCS § 207/5(f)). Comparatively, sexually dangerous persons suffered from a mental disorder and are deemed likely to offend children sexually (725 ILCS § 205/1.01). Both sexually violent and sexually dangerous persons are mandated to register every 90 days throughout their life (730 ILCS § 150/6).

### **Home sale prices**

Given that sex offenders' addresses are available on the registries, citizens can use this information to inform their home-buying decisions. This is one explanation for the consistent finding that showed RSOs are negatively related with the housing market values (Bian et al., 2013; Caudill et al., 2014; Larsen et al., 2003; Linden & Rockoff, 2008; Pope, 2008; Wentland et al., 2014), which subsequently recovers once the RSO leaves the neighborhood (Pope, 2008; Wentland et al., 2014). Larsen et al. (2003) investigated the effect of RSOs on home sale values using a single year of data from Montgomery County, Ohio. Their list of RSOs was divided by type of notification – limited disclosure and passive notification. Limited disclosure sex offenders are deemed more dangerous than passive notification due to their potential to recidivate, and required the sheriff's office to proactively notify neighbors and school officials of their presence. Sensibly, within a tenth of a mile, limited disclosure offenders produced a greater reduction in home sale price (\$11,864) compared to passive notification offenders (\$4,208). Seemingly, a greater the awareness by citizens via the sheriff's notification produced the largest reduction in home sale price.

Linden and Rockoff (2008) further examined the relationship between home sale prices and the presence of RSOs with the addition of approximate sex offender move-in dates to establish causality. Properties sold in Mecklenburg County, North Carolina between 1994 and 2004 were matched to RSOs who arrived near the sold property within a two-year window. Results showed that the move-in of RSOs brought about a four percent decline (\$5,500) in the median sale price of homes within one-tenth of a mile of the RSO. Sold homes from one-tenth of a mile to three-

tenths of a mile experienced no financial impact by the presence of a RSO. Notably, sold homes directly adjacent to RSOs declined 11.6% in sale prices. These findings supported the notion that the move-in of RSOs was associated with depressed selling prices of sold homes, and that greater financial impact resulted when they resided next door to sold homes.

A causal link between home sale values and the presence of RSOs was further established by Pope (2008) as he included their move-in and move-out dates. Pope (2008) examined homes sold from October 1996 to April 2006 in Hillsborough County, Florida. Results revealed a \$3,500 reduction in home sale values when RSOs were within a tenth of a mile of sold homes, on average. Similar to Linden and Rockoff (2008), RSO produced no financial impact on sold homes within the two-tenths and three-tenths of a mile buffer zones. With move-out dates, Pope (2008) found that the departure of the RSO resulted in rebounded housing prices. Notably, these findings were based on a lenient alpha value of 90%.

Mixed results were produced when studies explored the relationship of home sale prices to sex offenders identified as more dangerous (due to their potential to recidivate or conviction of violent sexual crimes) than other sex offenders (Larsen et al., 2003; Pope, 2008; Wentland et al., 2014). Most recently, Wentland et al. (2014) examined the suburban/rural surrounding areas of Lynchburg, Virginia. Sex offender legislation in Virginia separates RSOs by the type of their convicted crime, violent or non-violent. Homes near a violent RSO, compared to a non-violent sex offender, experienced a greater financial impact and a lengthened period on the market.

Comparatively, concentrations of RSOs produced even greater financial reductions in selling prices. Wentland et al. (2014) reported that an extra \$695 monetary loss occurred with each additional RSO within a mile of the marketed property. They examined sold and unsold properties at several distances that ranged from one-tenth of a mile to one mile. The greatest financial reduction (\$15,533) occurred within one-tenth of a mile. Building upon Wentland et al. (2014), Bian et al. (2013) specifically examined the concentration effect of RSOs on home sale prices coupled with the liquidity of the sales. Four or more RSOs produced the greatest concentrated financial effect with a \$26,017 monetary loss and an extended 164 days on the real estate market. Unlike the studies that examined heavily urbanized counties, Wentland et al. (2014) looked at primarily suburban and some rural residential properties in central Virginia. However, these scholars were neither explicit about their rural findings, nor detailed the differences in the selling prices by the community setting of RSOs.

Caudill et al. (2014) examined both the distance and concentration relationships between RSOs and home sale transactions in Shelby County, Tennessee. A total of 2,036 single family homes sold from 2008 to 2012 were matched with 1,203 RSOs after the offender moved within one mile of the sold home. Different from the previous studies, Caudill et al. (2014) controlled for the unobserved neighborhood characteristics via a spatial model that allowed for spatial

dependence, which may have inflated the effect caused by the nearby presence of RSOs. This model revealed that the selling price of homes within one-tenth of a mile and one mile from the nearest RSO decreased by 14% (\$8,653.95) and 7.4%, respectively. Meaning, sold homes 1,000 feet away (in accordance to Tennessee's residency restriction) from RSOs appreciated by \$6,410.25. Another key finding showed that for each additional RSO within a one-mile radius of a sold home property values dropped by nearly two percent.

From these studies, several things can be concluded. First, the presence of a RSO had a financial impact on real estate property. Second, the financial impact lessened (if not was non-existent) as the distance between the home sale site and the residence of the RSO increased. Third, the financial impact was greater when the RSO was identified as more dangerous due to their crimes or propensity to recidivate. Lastly, concentrations of RSOs produced greater monetary losses in home sale values than a single RSO. In sum, the urban and suburban research has confirmed a causal link between sex offenders and lower home sale values.

### **Push to rural areas?**

Previous research has almost exclusively taken place in urban and suburban communities. However, there is evidence that one consequence of sex offender legislation is the increased rate of relocation of offenders into less densely populated rural areas (Chajewski & Mercado, 2009; Grubestic, Murray, & Mack, 2011; Zandbergen & Hart, 2006). In their analysis of housing options in Orange County, Florida for RSOs, Zandbergen and Hart (2006) found that most of the available housing existed in low-density rural areas. Specifically, only 7.3% of rural/agricultural areas and 10.6% of rural settlements were restricted to RSOs. To put it differently, a greater amount of rural space was available to RSOs than urban locations. Comparatively, Chajewski and Mercado (2009) found that a 1,000-foot residency restriction left more space that is available in a rural area (89.16%) than an urban area (51.40%) for RSOs. One explanation is that as urban areas become off-limits to sex offenders, RSOs may be pushed towards less populated, rural areas due to limited housing options. Given these points, sex offender legislation has promoted the ostracism of RSOs by the relegation of their presence into rural communities away from necessary resources (e.g., treatment) to effectively reduce recidivism, and simultaneously, may have financially harmed rural communities at no fault of their own.

### **Purpose of the Study**

Although previous studies have established the relationship between RSOs and home sale values it has yet to be tested outside a densely populated urban county (Caudill et al., 2014; Larsen et al., 2003; Linden & Rockoff, 2008; Pope, 2008) or independent city (Bian et al., 2013; Wentland et al., 2014). The purpose of this study is to extend the previous results by examining the relationship between RSOs and home sale prices in a county largely defined as rural and

agricultural (Qualifying Urban Areas for the 2010 Census, 2012). Utilizing spatial data, this article investigates the financial impact of RSOs and SPs on home sale values in a less densely populated Midwestern U.S. county. Research questions to be addressed include:

- a. Does the distance of the nearest RSO affect home sale value after controlling for property and neighborhood characteristics?
- b. Does the distance of the nearest SP affect home sale value after controlling for property and neighborhood characteristics?
- c. Do the concentrations of RSOs affect home sale value after controlling for property and neighborhood characteristics?
- d. Do the concentrations of SPs affect home sale value after controlling for property and neighborhood characteristics?

## **Methods**

### **Data and unit of analysis**

Located in the center of Illinois is McLean County, which is home to 174,647 residents across 1,183.38 square miles, making it much less dense at 143.3 persons per square mile (U.S. Census Bureau of State & County QuickFacts, 2015e) than the counties previously explored.<sup>1</sup> For example, the reported persons per square mile in Mecklenburg County, NC (1,775.5), Hillsborough County, FL (1,204.9), Montgomery County, OH (1,159.5), Shelby County, TN(1215.5), and the independent city of Lynchburg, VA (1,538.2) were exceedingly higher than McLean County, Illinois (143.3) (U.S. Census Bureau State & County QuickFacts, 2015a-f).<sup>2</sup> While census tracts have been used in this almost exclusively urban sex offender research, due the sparse sex offender population spread out over a largely rural/agricultural area, and the low persons per square mile in the current county under exploration, census blocks were a more appropriate unit of analysis. An added benefit of census blocks included the reduction of grossly overstated financial losses related to RSOs that are typically associated with the use of large areas (e.g., census tracts) (Pope, 2008).

### **Dependent variable**

*Home Sale Prices:* The sale prices for 3,054 single-family residences were collected from the McLean County Tax Assessor's office from December 2012 – December 2013.<sup>3</sup> Single-family residences were chosen to correspond with the previous literature that explored the relationship between home sale prices and the presence of sex offenders. In keeping with

previous research, multi-family residences, farmland, homes sold under \$7,500 and over \$800,000, and recording errors were excluded (Bian et al., 2013; Caudill et al., 2014; Larsen et al., 2003; Linden & Rockoff, 2008; Pope, 2008; Wentland et al., 2014).<sup>4</sup> The final sample contained 2,529 sold homes (1,408 in the City of Bloomington; 684 in the town of Normal; and 437 in the outer rural townships in McLean County).<sup>5</sup> Homes sold in the City of Bloomington and the town of Normal are defined as urban areas ( $n = 2,092$ ), whereas sold homes located in rural townships are defined as (outer) rural areas ( $n = 437$ ).

### **Independent variables**

**Sex Offenders:** Illinois classified RSOs into four classes: criminal sex offender, sexual predator, sexually violent person, and sexually dangerous person. According to the Illinois sex offender registry, a total of 302 individuals convicted of registerable sex offenses resided in McLean County, Illinois on December 12, 2012.<sup>6</sup> A total of 146 RSOs remained after the removal of invalid addresses and non-compliant statuses.<sup>7</sup> Although it is not possible to discern whether the removal of half of the sample is unusual,<sup>8</sup> a majority of these RSOs were currently serving time for their crimes at the Illinois Department of Corrections. Of these 146 RSOs, 99 resided in Bloomington, 26 in Normal, and 21 live in smaller cities and towns that are considered rural in McLean County. Thus, of the 146 RSOs, 69 (47.3%) were termed SPs—which included five sexually violent persons. There were no sexually dangerous persons in the sample.

**Distance:** For distance, the point of origin is the sold home. Distance is defined as the nearest RSO or SP identified to the sold home within the two-tenths of a mile (1,056 feet) buffer zone. The distance of two-tenths of a mile was selected for a number of reasons. First, at least 20 states, and several municipalities have imposed residency restrictions of 500 to 1,500 feet on sex offenders (Meloy et al., 2008).<sup>9</sup> Second, previous literature observed distances that ranged from one-tenth of a mile to a mile. However, one-tenth of a mile did not identify many sex offenders nearby sold homes due to the rural-like community structures of McLean County, Illinois, and the distance of one mile was considered too far of a distance as other extraneous factors may have influenced the home sale price reductions. Third, this distance of two-tenths of a mile was selected as previous studies also examined household financial reactions to RSOs at this distance (Larsen et al., 2003; Pope, 2008). Thus, we determined that two-tenths of a mile was a reasonable distance for a buffer zone.

**Concentration:** To explore the concentrations of RSOs or SPs within two-tenths of a mile buffer zone of a sold home, three dummy variables were created: (a) sold homes with no RSOs or SPs within two-tenths of a mile were coded as “1” while remaining sold homes were coded as “0”, (b) sold homes that maintained the presence of one RSO or one SP within two-tenths of a mile were coded as “1” while remaining sold homes were coded as “0”, (c) sold homes that

maintained the presence of two or more RSOs or SPs within two-tenths of a mile were coded as “1” while remaining sold homes were coded as “0”.

**Control Variables:** Property and neighborhood characteristics of the sample of sold homes were included as control variables. First, to control for their possible influence on sale price, two home property characteristics were collected, including the *age* and *building square footage* of each sold home. Several property characteristics were considered, such as, AC; acreage; attic; attic square feet; basement; basement, garage, ground, lot, and porch square feet; ceiling type; classification; deck; deck square feet; exterior wall material; fireplace type; floor finish; floor material; foundation type; garage type; heat; interior wall material; number of stories and times sold; patio; pool; porch; porch type; roof material; and total number of bathrooms, bedrooms, fireplaces, and rooms. Previous literature that has examined the relationship between sale prices and the presence of sex offenders varied in collected housing characteristics and reported mixed findings with these housing features. However, all of these studies maintained age and building square feet. Consequently, we felt comfortable with the use of age and building square feet as our housing characteristics.

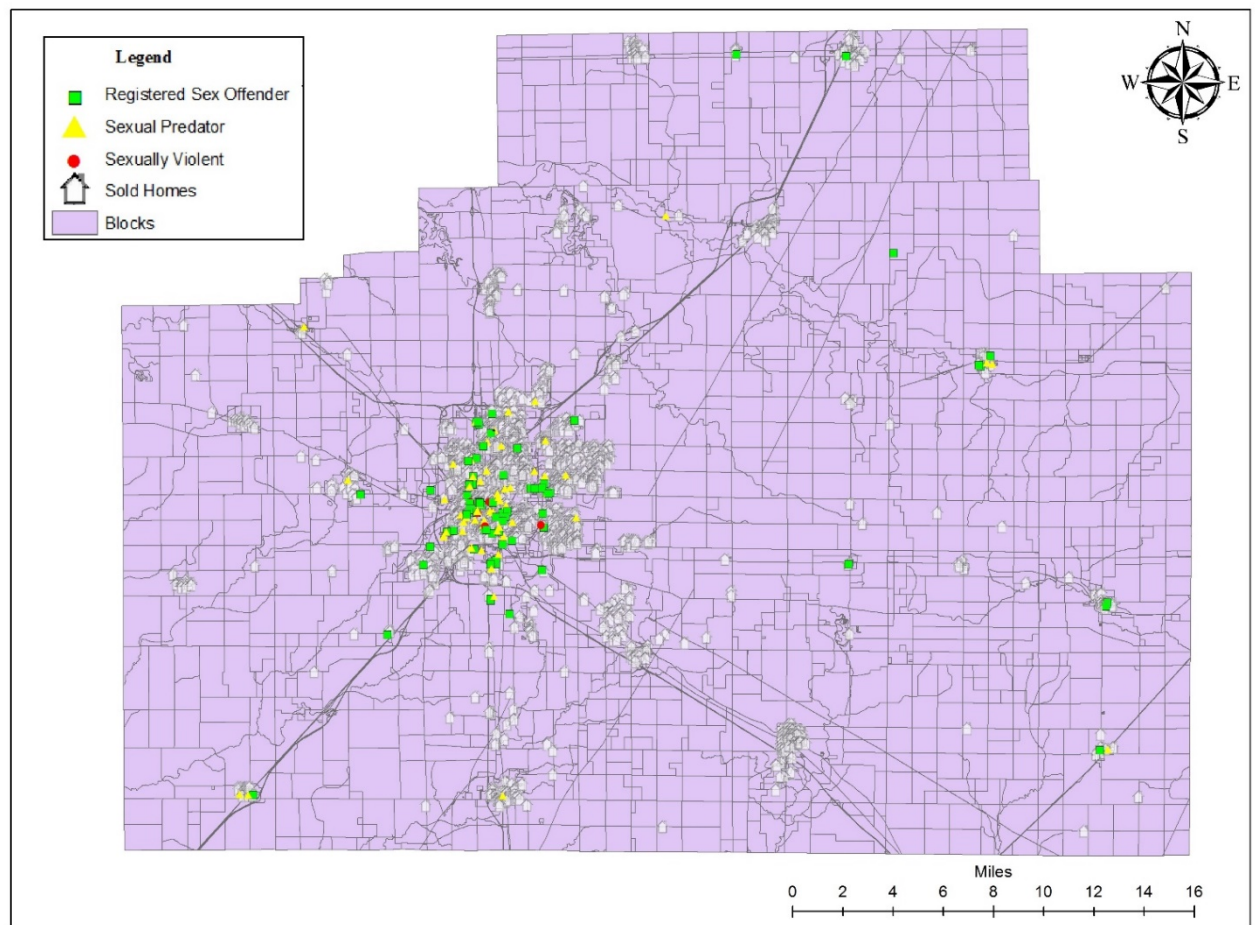
Second, three census block variables were provided by the 2010 U.S. Census Bureau operated entity, American FactFinder, and represented neighborhood characteristics to control for their possible influence on the sale price. Census variables included *renter-occupied housing units*, *female-headed households*, and *vacant total housing units*. These three census variables were then converted into standardized rates that represented each census block. Renter-occupied housing units and female-headed were standardized per 100 occupied housing units. Vacant total housing units were standardized per 100 total number of housing units. These variables were chosen as RSOs tended to reside in areas with high levels of renter-occupied housing units (Mustaine & Tewksbury, 2011), female-headed households (Mustaine & Tewksbury, 2008; Mustaine et al., 2006; Tewksbury & Mustaine, 2007), and vacant homes (Gordon, 2013; Suresh et al., 2010). Census blocks of McLean County were displayed via a shapefile downloaded from the Topologically Integrated Geographic Encoding and Referencing System (TIGER).

### **Data analyses**

Utilizing ArcGIS, the residences of RSOs, SPs, and sold homes with their property characteristics were geocoded with a 100 percent match, which is above the accepted match rate of 90% (Bichler & Balchak, 2007). Neighborhood characteristics were matched to each census block, and subsequently spatially joined to the sold homes. The point distance analysis tool in ArcGIS was used to ascertain the distance from the sold home to the nearest RSO and nearest SP within two-tenths of a mile. The buffer analysis tool in ArcGIS was then used to identify the number of RSOs and SPs within two-tenths of a mile of a sold home to ascertain the concentrations of both sex offender groups. The spatial join function in ArcGIS was then utilized



to join the datasets of sold homes (with their property and neighborhood characteristics) to the distances of the nearest RSO and SP, and the concentrations of sex offenders (Figure 1).



**Figure 1: Location of RSOs and SPs along with sexually violent persons and sold homes per census block in McLean County, Illinois**

Once all the datasets were joined via ArcGIS, they were then analyzed in SPSS. First, with descriptive, bivariate correlations, and finally with Ordinary Least-Squares (OLS) Regression analyses were run. Multiple linear regression analyses with forced entry of the variables were conducted to determine if sale price could be associated with the nearest RSO and SP and the concentrations of RSOs and SPs. Next, independent t-tests and one-way ANOVAs were performed between the type of setting and sex offender to assess whether selling prices of sold homes nearby urban-based sex offenders differed from their rural-based counterparts.

The data were screened for any violation of assumptions prior to analysis, and the assumptions were met. In detail, the initial results indicated the presence of outliers, which were removed for the analysis. Normality assumption is not violated as the standardized residuals are

almost symmetrical and lying along the diagonal line respectively, according to the histogram and normal probability plots. Examination of casewise diagnostics, including Mahalanobis distance, Cook's distance, center leverage values, DFFITS, and DFBeta values suggested no cases were exerting undue influence on the concentration and distance models. The Durbin-Watson  $d$  statistics was computed for each model to evaluate the independence of errors and assess spatial autocorrelation considering many of the cases were geographically close to each other. All of the observed values for  $d$  were close to the expected value of 2.00 (concentrations of RSOs,  $d = 1.592$ ; concentrations of SPs,  $d = 1.585$ ; distance of the nearest RSO,  $d = 1.766$ ; distance of the nearest SP,  $d = 1.763$ ), which suggested that the assumption of independent errors has been met. A relatively random display of points, where the spread of residuals appears relatively constant over the range of values of the independent variables provided evidence of linearity and homoscedasticity. Notably, the distance models exhibited a greater possibility of heteroscedasticity than the concentration models. No multicollinearity was found in either the distance or the concentration models.

The present study was unable to acquire move-in and move-out dates to include a temporal variable in order to establish a causal link between sex offenders and sale prices. The Illinois sex offender registry does not maintain move-in and move-out dates of persons convicted of sexual crimes. Therefore, we are unable to assess the causal link between RSOs and selling prices of sold homes. Although the data presented a cross-sectional look at the influence of RSOs on home sale values, cross-sectional examinations are representative of long-term relationships between the variables of interest (Hirschi & Gottfredson, 1983), coupled with the fact that no one study has explicitly explored a less densely populated U.S. county with a predominant amount of rural and agricultural communities.

## **Results**

Overall, the univariate results suggested sold homes that maintained RSOs and SPs within two-tenths of a mile were associated with greater levels of disadvantage than homes sold without the presence of sex offenders (Table 1). Sold homes that maintained RSOs and SPs within two-tenths of a mile sold for less, were older and smaller and had greater levels of renter occupied housing units, female-headed households, and vacant total housing units than sold homes without any sex offenders within two-tenths of a mile. Further, sold homes that contained two or more RSOs or SPs within two-tenths of a mile were even lower in sale prices, older, smaller, and had greater percentages of renter occupied housing units, female-headed households, and vacant total housing units than sold homes that maintained one RSO or SP. In line with the literature, the presence of two or more SPs within two-tenths of a mile of sold homes resided in neighborhoods that maintained the lowest sale prices and oldest homes, as well as the highest rates of renter-occupied housing units and vacant total housing units. Comparatively, the concentrations of two

or more RSOs within two-tenths of a mile of sold homes resided in neighborhoods with the smallest sold homes and the highest rate of female-headed households.

**Table 1: Mean Balances of Homes Sold in McLean County with All Variables**

Variables	Number of sold homes	Selling price (\$)	Age (years)	Building Sq. Ft.	Percent Renter	Percent Female- headed	Percent Vacant
Distance							
All sold homes	2529	167492.57	40.75	1692.04	14.18	7.99	4.93
Sold homes w/o RSOs	1983	182582.61	34.91	1781.63	11.85	6.99	4.49
Nearest RSO	546	112687.53	61.94	1366.63	22.68	11.62	6.55
Sold homes w/o SPs	2158	177748.35	36.72	1751.59	12.38	7.33	4.57
Nearest SP	371	107837.62	64.18	1345.64	24.68	11.82	7.08
Concentration							
All sold homes	2435	163237.56	41.76	1663.27	14.44	8.17	4.83
Sold homes w/o RSOs	1895	178281.67	35.91	1751.76	12.04	7.16	4.34
All RSOs	540	110443.87	62.28	1352.73	22.88	11.72	6.55
1 RSO	341	126608.07	54.41	1399.08	17.52	10.13	4.76
2+ RSOs	199	82745.42	75.75	1273.31	32.06	14.43	9.60
Sold homes w/o SPs	2066	173467.67	37.76	1721.80	12.60	7.52	4.42
All SPs	369	105960.05	64.18	1335.57	24.76	11.85	7.09
1 SP	291	114588.15	58.48	1336.17	21.39	11.30	11.30
2+ SPs	78	73770.56	85.41	1333.33	37.32	13.92	11.81

**Note:** Concentration sample includes sold homes later used in the regression analyses with the drop in count related to missing data.

Table 2 shows the bivariate analysis between the sold homes' sale prices, property and neighborhood characteristics, with and without the concentrations of RSOs and SPs identified within two-tenths of a mile of sold homes. Three aspects of the correlation table are notable. First, the property characteristics exhibited the strongest statistical relationships to the sale prices, followed by neighborhood characteristics, then the presence of RSOs and SPs. Second, the distance to the nearest SP was not related to sale prices,  $r(371) = 0.07$ ,  $p < .17$ , but the distance to the nearest RSO,  $r(546) = 0.14$ ,  $p < .001$  did yield a statistically significant positive relationship with sale prices. Therefore, sale price increased as the distance of the nearest RSO offender to the sold home increased. Third, the nearest SPs to the sold homes did not show any statistically significant relationships to either the property or neighborhood characteristics of sold homes. Multivariate analyses were conducted for further analysis of these relationships.

Table 3 presents the results of the multivariate analyses measuring the distance to the nearest RSO (Model 1;  $R^2 = .63$ ,  $F[6, 546] = 155.98$ ,  $p < .001$ ) and SP (Model 2;  $R^2 = .62$ ,  $F[6, 371] = 102.75$ ,  $p < .001$ ) identified within two-tenths of a mile of sold homes along with the

**Table 2: Correlations of Sex Offenders & Property and Neighborhood Characteristics, N=2,529**

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Selling price													
2. Nearest RSO <sup>a</sup>	.14***												
3. Nearest SP <sup>b</sup>	.07	.84***											
4. No RSO	.30***	— <sup>c</sup>	— <sup>c</sup>										
5. 1 RSO	-.16***	.21***	-.04	-.76***									
6. 2+ RSOs	-.26***	-.21***	.04	-.56***	-.12***								
7. No SPs	.26***	.08	— <sup>c</sup>	.79***	-.55***	-.51***							
8. 1 SP	-.19***	.02	.11*	-.69***	.65***	.23***	-.87***						
9. 2+ SPs	-.18***	-.13**	-.11*	-.34***	-.07***	.61***	-.43***	-.07***					
10. Age	-.55***	-.11**	-.03	-.32***	.15***	.29***	-.28***	.18***	.23***				
11. BSF	.73***	.01	-.02	.26***	-.17***	-.19***	.22***	-.19***	-.10***	-.37***			
12. % Renter	-.34***	-.15***	-.04	-.22***	.06**	.26***	-.21***	.13***	.20***	.34***	-.27***		
13. % Female-headed	-.36***	-.08	.03	-.24***	.10***	.24***	-.20***	.15***	.13***	.27***	-.29***	.28***	
14. % Vacant	-.07***	-.08	-.08	-.11***	-.01	.18***	-.12***	.04*	.17***	.19***	-.05**	.21***	.03

Note. <sup>a</sup>n = 546 RSOs. <sup>b</sup>n = 371 SPs. <sup>c</sup>No RSOs or SPs were reported in these locations. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

control variables. The distance model of the nearest RSO ( $b = .07$ ,  $p < .05$ ) and nearest SP ( $b = .06$ ,  $p < .05$ ) indicated an association between sex offenders and the sale prices of sold homes. Concerning the nearest RSO, each additional foot between the sold home and nearest RSO was associated with a \$17.03 increase in sale price. Comparatively, each foot increase between the sold home and nearest SP predicted a \$15.25 increase in sale price. For each model, the control variables were all significant.

**Table 3: OLS Regressions of Distances of the Nearest RSO and Nearest SP Within 0.2 of a Mile and Control Variables Predicting Sold Homes' Selling Prices**

Variable	Model 1 (n = 546)			Model 2 (n = 371)		
	b	S.E.	$\beta$	b	S.E.	$\beta$
Nearest RSO	17.03*	6.83	.07			
Nearest SP				15.25*	7.74	.06
Age	-710.56***	63.46	-.33	-677.24***	73.01	-.34
BSF	70.15***	3.49	.54	65.86***	4.00	.54
% Renter	-314.13***	88.34	-.10	-370.17***	92.94	-.14
% Female-headed	-625.13**	203.08	-.09	-494.84*	243.16	-.07
% Vacant	-671.87**	237.39	-.08	-544.27*	256.88	-.08
Constant	69068.15***	8672.51		71563.92***	9754.30	
R <sup>2</sup>			.63***			.62***
Adjusted R			.63***			.62***
F			155.98***			102.75***
df			6			6

Note: \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$ .

Table 4 presents the results of the multivariate analyses with the concentrations of RSOs (Model 1;  $R^2 = .73$ ,  $F[7, 2435] = 965.55$ ,  $p < .001$ ) and SPs (Model 2;  $R^2 = .73$ ,  $F[7, 2435] = 965.21$ ,  $p < .001$ ) identified within two-tenths of a mile of sold homes along with the control variables. Looking at the concentrations of RSOs in Table 4, two or more RSOs were associated with a decrease in the sale prices of sold homes ( $b = -.04$ ,  $p < .001$ ), but not in the case of a single RSO ( $b = -.01$ ,  $p = .22$ ). The sale prices of sold homes were associated with a \$12,750.14 decrease with the presence of two or more RSOs within two-tenths of a mile. Concentrations of SPs identified within two-tenths of a mile of sold homes (Model 2) showed similar relationships with the concentrations of RSOs (Model 1) displayed in Table 4. Two or more SPs were associated with a decrease in the sale prices of homes ( $b = -.04$ ,  $p < .001$ ) by \$17,797.47, whereas a single SP ( $b = -.02$ ,  $p < .13$ ) was not related to selling prices.

**Table 4:** *OLS Regressions of Concentrations of RSOs and SPs Within 0.2 of A Mile and Control Variables Predicting Sold Homes' Selling Prices, N = 2,435*

Variable	Model 1 – RSOs			Model 2 - SPs		
	b	S. E.	$\beta$	b	S. E.	$\beta$
1 RSO	-3311.62	2691.40	-.01			
2+ RSOs	-12750.14***	3615.08	-.04			
1 SP				-4324.64	2876.25	-.02
2+ SPs				-17797.47***	5381.31	-.04
Age	-810.53***	29.46	-.33	813.08***	29.33	-.33
BSF	83.01***	1.60	.61	83.28***	1.60	.61
% Renter	-211.92***	49.39	-.05	212.13***	49.38	-.05
% Female-headed	-1008.88***	121.51	-.09	1038.79***	120.69	-.10
% Vacant	151.74	133.84	.01	148.46	133.67	.01
Constant	71099.79***	3628.53		70602.560***	3617.73	
$R^2$			.73***			.73***
Adjusted $R^2$			.73***			.73***
F			965.55***			965.21***
df			7			7

Note: Reference groups: sold homes without RSOs/SPs. \*  $p < .05$ . \*\*  $p < .01$ . \*\*\*  $p < .001$

Although not shown to conserve space<sup>10</sup>, both independent t-tests (for urban vs. rural assessments) and ANOVAs were conducted between region (i.e., Bloomington, Normal, and rural townships) by the type of sex offender. Independent t-tests showed statistically significant differences in selling prices of sold homes nearby RSOs and SPs when the settings were dichotomized as urban or rural. On average, rural-based sex offenders resided nearby homes with lower selling prices. Post-hoc analyses using the LSD post-hoc criterion for significance indicated that when the region was disaggregated into three primary regions—Bloomington, Normal, and rural townships—, sold homes nearby RSOs paralleled with the independent t-test results as lower selling prices were located by rural-based RSOs; RSOs exhibited statistically

significant differences in the selling prices per each region ( $F[2, 553] = 16.70, p = .001$ ). In contrast, SPs ( $F[2, 376] = 16.59, p = .001$ ) who resided in Bloomington ( $M = 95,857, SD = 66,681, n = 247$ ) or rural areas ( $M = 76,090, SD = 47,329, n = 15$ ) were not statistically different in selling prices, but Normal ( $M = 133,346, SD = 48,794, n = 114$ ) expressed statistically significance differences in selling prices when compared to RSOs in Bloomington and rural areas as well as maintained the highest home sale values. Altogether, homes varied in selling prices per region, with sales values higher in Normal, followed by Bloomington, and then rural areas.

Overall, these findings indicated that the presence of RSOs and SPs are generally associated with a decrease in the sale prices of homes sold in McLean County, Illinois even after accounting for characteristics of the property and neighborhood. Results also suggested that, in order to be compliant with sex offender registration and notification policies, RSOs and SPs lived in areas that had vulnerable characteristics that included lower sale prices of sold homes, older and smaller homes, and higher levels of renter occupied housing units, female-headed households, and vacant total housing units. Altogether, the findings suggested that the presence of sex offenders are associated with an additional monetary loss in home sale prices in already vulnerable neighborhoods located in a rural and agricultural community.

## Discussion

This study contributed to the sex offender literature with an exploration of whether the presence of RSOs and SPs were associated with a decrease in sale prices of homes in a largely rural and agricultural community. These relationships were uncovered by looking both at the distance between a sold home to the nearest RSO and SP and the concentrations of RSOs and SPs around sold homes within the two-tenths of a mile buffer zones. Concerning the distance of the nearest RSO, every additional foot between the sold home and the residence of the nearest RSO was associated with a \$17.03 increase in sale price. The concentration measurement revealed that the presence of a single RSO was not related to home sale values, but two or more RSOs were related to a \$12,750 drop in sale prices. The finding that a greater concentration of RSOs is associated with the greatest financial loss is in keeping with past research.

This study is the first to examine the financial relationship between concentrations of RSOs identified as more dangerous—SPs—and home sale values. Results suggest that concentrations of two or more SPs were associated with a \$17,797 reduction in home sale prices. Yet, remarkably, a lesser financial gain (when compared to the nearest RSO) occurred to the nearest SP, with every additional foot between the sold house and the nearest SP associated with a \$15.25 increase in sale price. The different financial impacts created by RSOs and SPs found in this study may be explained by the classifications of a SP by the Illinois sex offender legislation. Illinois deemed SPs more dangerous due to their potential to reoffend (730 ILCS § 150/2) and

are required to register more often (730 ILCS § 150/7). Although, our findings concerning SPs may be related to the fact that SPs resided near sold homes with lower selling prices, on average.

The second theme that emerged was that the greater the number of sex offenders, the more disadvantaged their surroundings. Sold homes that maintained two or more sex offenders within two-tenths of a mile were more disadvantaged than neighborhoods that maintained the residence of one sex offender. Thus, these results supported what has been found in a several urban/suburban studies that high densities of sex offenders are typically located in more socially disorganized neighborhoods (Gordon, 2013; Hughes & Burchfield, 2008; Hughes & Kadleck, 2008; Linden & Rockoff, 2008; Suresh et al., 2010; Tewksbury & Mustaine, 2007, 2008). The presence of SPs was also associated with greater levels of disadvantage compared to RSOs. Sold homes that maintained the presence of one SP within two-tenths of a mile were more disadvantaged than those with the presence of one RSO. Moreover, sold homes that maintained the presence of two or more SPs within two-tenths of a mile maintained lower sale prices and older homes, and higher rates of renter-occupied housing units and vacant total housing units. Albeit sold homes that maintained two or more RSOs within two-tenths of a mile were smaller in size and had higher rates of female-headed households.

RSOs may be responsible, in part, for pushing a neighborhood into social disorganization or it could be that the RSOs, due to limited housing options, are pushed into socially disordered neighborhoods. For example, because sex offenders have fewer employment options available to them, lower incomes, and limited housing options, the effect may be that sex offenders move into low-income, low-rent neighborhoods, which are already socially disadvantaged for a variety of socio-economic and/or property issues. Given these consequences, coupled with a greater availability of land to be occupied by RSOs in rural and/or agricultural areas (Chajewski & Mercado, 2009; Grubestic, Murray, & Mack, 2011; Zandbergen & Hart, 2006), the relationship between disadvantaged non-urban neighborhoods and RSO needs further exploration. In the present study, RSOs, in general, resided by sold homes that varied in selling prices per community setting, with the lowest valued sold homes being located in rural areas. At the same time, rural-based SPs tended to reside nearby sale values that are similar to some urban SP counterparts (i.e., Bloomington) but not other urban SPs (i.e., Normal). Overall, RSOs and SPs who resided in rural townships resided in areas with the lowest selling prices when compared to sold homes located in more urbanized locations, which may simply be related to rural localities maintaining lower housing property values.

## **Limitations**

This study is not without limitations. First, it is possible that the community under exploration is not representative of the other rural and agricultural communities that house sex offenders. Therefore, caution should be used when generalizing the results. In addition, we

cannot compute reliable and/or valid multivariate analyses given that so few homes are within a close proximity of sex offenders in these rural locations, and consequently, no meaningful conclusions would result given this methodological issue. This limitation calls for future scholars interested in the rural (and even suburban) socioecological associations of RSOs to further investigate this potential dilemma faced by rural (and suburban) communities.

Second, although the presence of RSOs and SPs were associated with decreased home sale values, property and neighborhood characteristics often had more predictive power. In a similar vein, there are other aspects, such as additional property and neighborhood characteristics, crime, and the housing market economy that were not included in the analysis that could have explained the reduction in home sale prices other than the presence of RSOs and SPs. Real estate market fluctuations may have influenced the sale values of the sample's sold homes. However, it is unlikely given the short length of the examined period which was limited to a year's worth of sold homes (cf. Larsen et al., 2003). Third, the examination of the distance between a sold home to the nearest RSO and SP did not control for the effect of multiple offenders within that buffer zone.

Finally, the present study was unable to establish causal inference. Move-in and move-out dates were unavailable to establish a causal link between sex offenders and sale prices. Sex offenders are known for being a transient population (Pope, 2008). For instance, a sex offender could reside in one residence and move a month or two later. This confounds the relationship between home sale prices and RSOs. The RSO and housing price literature rest on the assumption that RSOs cause a decrease in home sale value. However, research has been unable to answer this question for non-urban neighborhoods due to the difficulty in acquiring temporal data; thus, a limitation that should be addressed in future research. However, this research does take the first step by showing an association between sex offenders and levels of disadvantage in non-urban areas.

## **Conclusion**

Previous research has established that sex offender legislation has produced unintended financial consequences in communities located in urban areas. The present study extends these findings to rural communities as well. The massive public outcry for the protection of individuals that committed sexual crimes has relegated these offenders into disordered and less-densely populated neighborhoods. As a result, sex offenders are in compliance with the legislation imposed onto them, but these laws may have effectively diminished their opportunities to salvage their ability to convey themselves as reformed individuals. Moreover, their presence alone are related with depressed selling prices, in which concentrations of sex offenders are seemingly financially detrimental to rural communities as has been shown in RSO urban research. Policymakers must handle the difficult task of being simultaneously cognizant of



legislation promoted by moral panic and balance the well-being of communities, especially those likely to be resided by sex offenders. Ultimately, the intentions of public protection inherent in sex offender legislation have created a paradox where the public may be at great risk of financial harm when selling their homes, yet keep in mind that an ill environment is not a suitable climate for the reentry of sex offenders.

## **Endnotes**

<sup>1</sup>An examination of the 2010 U.S. Census results for persons per square mile in the three examined U.S. counties and independent city reported much higher numbers in density than McLean County, Illinois. Granted these statistics are from the 2010 U.S. Census, it still stands as a marker that these locations are significantly different when matched with the present study's U.S. County. In the 2010 U.S. Census, the reported persons per square mile in Mecklenburg County (1,775.5) (U.S. Census Bureau State & County QuickFacts, 2015b), Hillsborough County (1,204.9) (U.S. Census Bureau State & County QuickFacts, 2015a), Montgomery County (1,159.5) (U.S. Census Bureau State & County QuickFacts, 2015c), Shelby County (1215.5) (U.S. Census Bureau State & County QuickFacts, 2015f), and the independent city of Lynchburg, Virginia (1,538.2) (U.S. Census Bureau State & County QuickFacts, 2015d) were exceedingly higher than McLean County, Illinois (143.3) (U.S. Census Bureau State & County QuickFacts, 2015e). Important to note, Wentland et al. (2014) stated that they sampled Lynchburg, Virginia and the surrounding areas of central Virginia that they defined as a relatively rural and suburban setting. However, the authors were not specific in terms of a designated area.

<sup>2</sup>These are based on 2010 U.S. Census Bureau results.

<sup>3</sup>There are delayed recording procedures and human error for the home sale transactions in McLean County, Illinois. A home sale transaction might not be reported until months later or was not reported. As a result, the present study's home sale transaction dataset might not be the complete set of such transactions from December 2012 – December 2013. For instance, home sale transactions that took place in the later months of the year 2013 (when the complete data was pulled in late January 2014) might not be included in the present study's dataset due to delayed recording.

<sup>4</sup>The following are the reasons for their exclusion from the present study: 236 parcels were eliminated as they were not single-family residences; 121 parcels were eliminated as they had identical document numbers, therefore were repeats; 50 parcels were sold along with another parcel or parcels; 45 parcels information could not be found, which are unique to each sale transaction; 36 parcels were farmland; 18 parcels were removed as they were outliers below \$7,500, a number chosen as Pope (2008) decided to remove parcels that sold below that amount;

seven parcels were removed as they were repeats, as a result of switched deeds; five parcels were removed for an unknown/missing built year; three parcels were removed as they were outliers above \$800,000; two parcels once mapped in ArcGIS were located outside of McLean County, thus removed; once parcel was vacant land; and one parcel was sold outside the examined date frame.

<sup>5</sup>The 2010 U.S. Census Bureau recognized urbanized areas as a population over 50,000, urban clusters are defined as a population from 2,500 to 50,000, and those not labeled as either are considered rural areas. The twin municipality, Bloomington-Normal, is the only area in the county identified as an urbanized area and the town of Heyworth is the only area in the county identified as an urban cluster (Qualifying Urban Areas for the 2010 Census, 2012). The following areas are designated as outer rural townships: Anchor, Arrowsmith, Bellflower, Bloomington (Twin Groves), Carlock, Chenoa, Colfax, Cooksville, Danvers, Downs, Ellsworth, Gridley, Heyworth, Hudson, Le Roy, Lexington, Merna, Saybrook, Shirley, Stanford, and Towanda.

<sup>6</sup>The registry provided the following information of a person convicted of a sexual crime: last name; first name; street address; city; state; zip code; residence county; X and Y coordinates; height; weight; race; gender; date of birth; victim under/over the age of 18; compliance status; classification; conviction county; conviction status; age of victim; age of offender at the time of offense; and sexual convicted crimes.

<sup>7</sup>A total of 156 RSOs were removed from the analyses for the following reasons: 119 were incarcerated the Illinois Department of Corrections; 11 resided at the Illinois Department of Human Services; seven were incarcerated in other U.S. states or U.S. counties; five resided in a different state; with the remaining 14 being homeless, non-compliant, and/or maintained an unknown address.

<sup>8</sup>Additionally, scholars who investigated the RSO-home sale value relationship had not explicitly stated their study's original and final RSOs sample sizes. Further, each study varied in their methodological procedure with how RSOs are removed for subsequent analysis. For these reasons, it is difficult to compare and state whether a loss of about half of the RSOs is normal. Having said that, we followed Linden and Rockoff's (2008) procedures by removing non-compliant RSOs and those with invalid addresses, and they experienced a 34% loss in RSOs compared to our 51.4% loss. Thus, based on one study, we experienced a larger reduction when it came to our final RSO sample.

<sup>9</sup>Fourteen U.S. states maintain 1,000-foot to 1,500-foot restrictions. Six U.S. states maintain 500 foot to 999-foot restriction zones. Moreover, five other U.S. states (Maryland, Minnesota, Oregon, South Carolina, and Wisconsin) maintain various residency restrictions (Meloy et al., 2008).

<sup>10</sup>Upon request, we will provide the independent t-test and ANOVA results.

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